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NATIONAL MONUMENTS AS WILD-LIFE SANCTUARIES

ADDRESS :: :: By T. S. PALMER
Expert in Game Conservation, Biological Survey

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NATIONAL MONUMENTS AS WILD-LIFE SANCTUARIES.

By T. S. Palmer, Expert in Game Conservation, Biological Survey.

Much has been written and many photographs have been published illustrating the wild life in the national parks. The bears, the buffalo, and the elk of the Yellowstone are as closely associated with this park as are the hot springs or geysers. The mountain sheep is almost as closely associated with the Rocky Mountain Park or the mountain goat with the Mount Rainier or the Glacier Park as are waterfalls with Yosemite or the big trees with the Sequoia Park. Of national parks there are now 16 and of national monuments 21 in charge of the National Park Service of the Department of the Interior. In addition, there are 11 national monuments on national forests in charge of the Forest Service of the Department of Agriculture, and 2 national monuments under the jurisdiction of the War Department. Of these 50 reservations, the 34 monuments have a combined area of about 1,900 square miles, or a little more than one-fourth the area of the national parks and a little less than that of the State of Delaware.

Comparatively little has been published on the wild life of the national monuments and even the existence of some of the most interesting reservations is scarcely known to the public. Much less has the tourist or casual visitor a clear idea of what constitutes a national monument, of the diverse character of monuments, or of the distinction between a national monument and a national park. This, perhaps, is not surprising when it is recalled that only a few years ago a former Cabinet officer to whom was submitted a recommendation for the establishment of one of the larger national monuments inquired, "What kind of a monument do you propose to build?" And upon being assured that it was not the intention to build any monument, but merely to preserve some objects of unusual scientific interest under the national monuments act, remarked, "Well, I don't know what you are going to do, but if Mr. ——— says it is all right I will approve the recommendation." And within a few days the monument became an accomplished fact.

From time immemorial man has been accustomed to erect monuments in honor of celebrated men or to commemorate important events in history by monuments, and these monuments, many of them unfortunately now in ruins, are carefully preserved as ex-

amples of his work or mementos of his accomplishments. Similarly nature has carved rocks, has hollowed out caverns, and has developed remarkable types of plant and animal life adapted for peculiar conditions. The fact that such objects are properly monuments was recognized nearly a hundred years ago by the celebrated traveler Alexander von Humboldt who, in describing some of the marvelous trees he had found in his travels in the Tropics referred to them as "natural monuments." Recently the term "natural monuments" has been adopted abroad to denote any natural object of scientific interest, whether geological, botanical, or zoological, and the importance of preserving such monuments is now recognized both in Europe and America.

MOVEMENT FOR PRESERVATION OF NATURAL MONUMENTS SIMULTANEOUS IN EUROPE AND AMERICA.

It is interesting to note that the policy of preserving under the care of the Government objects of historic or scientific interest for the benefit of the public was adopted almost simultaneously in Germany and in the United States. In Prussia the movement took the form in 1906 of a provision for the appointment of a special officer known as the State commissioner for the care of natural monuments, who, under the supervision of the minister of education, was charged with the duty of locating, protecting, and making known the various objects of scientific interest worthy of preservation. No funds were provided for the purchase of sites of such monuments, but it was the duty of the commissioner to locate and mark them, and to interest the owners, whether State, municipal, or private, in their preservation. These natural monuments are of various kinds and may include an historic tree, an unusually fine specimen of some shrub, a group of rare plants, a bog containing northern plants or animals, a breeding colony of birds, a curiously carved rock or a glacial bowlder—in short, almost any object of scientific interest.

In the United States the movement took a somewhat different form, but in the same year resulted in the passage of an act of Congress providing for preservation under national auspices not only of natural objects of scientific interest, but also of historic landmarks and historic structures. This act, approved June 8, 1906, entitled "An act for the preservation of American antiquities," and commonly known as the national monuments act, authorizes the President of the United States to declare by public proclamation as national monuments, historic landmarks, historic and prehistoric structures, and other "objects of historic or scientific interest situated on lands owned or controlled by the Government of the United States." No appropriation was made for carrying the law into effect or providing for the care of the monuments which might be created in this way.

Not until 1910 was any general circular of information regarding the monuments available for general distribution, and not until 1916 was any specific appropriation made for their protection or any provision made for a comprehensive plan of administration.

Looking back over the past 10 years, it is interesting to observe that both in Prussia and in the United States the attainment of essentially the same object has been sought in different ways, but primarily by a campaign of education. In Prussia attention has been concentrated on educating the public as to the importance of preserving these natural treasures, whether under the care of State authorities or private individuals. In the United States attention has been concentrated on setting apart the more important natural monuments and historic landmarks on public lands as national monuments and preserving them by proclamations and warning notices.

THREE KINDS OF MONUMENTS—HISTORIC LANDMARKS, HISTORIC MONUMENTS, AND NATURAL MONUMENTS.

The national monument act practically contemplates the establishment of monuments of three different kinds:

(1) Landmarks, or places of purely historic interest, include such reservations as the Cabrillo Monument in California, which marks the point where Juan Rodriguez Cabrillo first sighted the coast of California in 1542; and the Big Hole Battlefield in Montana where a superior force of Nez Perce Indians was defeated by United States States troops on August 9, 1877. These monuments mark spots closely connected with the history of the West, but contain no prehistoric structures or objects of scientific interest.

(2) Historic structures, or monuments proper, comprise such ruins as Montezuma Castle, the Gila Cliff Dwellings, the ruins in Chaco and Walnut Canyons, and the old Spanish Missions of Gran Quivira in New Mexico and Tumacacori in Arizona.

(3) Natural monuments include a variety of objects of scientific interest, ranging from the stupendous gorge of the Colorado River in Arizona and the glacier covered summits of the Olympic Mountains in Washington to the wind-swept rocks of the Wheeler Monument in Colorado, the natural bridges in Utah, the Lewis and Clark Cave in Montana, the fossils of the Dinosaur Monument in Utah, the petrified forests in Arizona, the redwood trees of the Muir Woods in California, and the giant cactuses in the Papago Saguaro Monument in Arizona. In this group are found the monuments which are most important as wild life sanctuaries.

It could scarcely be expected that the historic, the archæological or the paleontological reservations would contain much that is remarkable in flora or fauna, but it is interesting to note that 8 or nearly 25 per cent of the 34 monuments, including most of the larger ones, are of considerable interest in connection with the

preservation of wild life. These eight monuments in the order of their creation are: (1) El Morro, in New Mexico; (2) the Muir Woods, in California; (3) the Grand Canyon, in Arizona; (4) the Pinnacles, in California; (5) the Colorado, near Grand Junction, Colo.; (6) Mount Olympus, in Washington; (7) Papago Saguaro, in Arizona; and (8) Sieur de Monts, in Maine. Two of them—Muir Woods and Papago Saguaro—are primarily botanical; three others—the Grand Canyon, Mount Olympus, and the Pinnacles—are essentially geological; while the Sieur de Monts combines historical, geological, botanical, and zoological attractions. Two are located in Arizona, two in California, and one each in Colorado, Maine, New Mexico, and Washington. With the exception of El Morro and the Muir Woods, each has an area of more than 1,000 acres—Mount Olympus, including some 300,000, and the Grand Canyon, more than 800,000 acres. Their combined area includes more than a million acres—a territory larger than the area of Glacier National Park, and more than half the size of the Yellowstone.

JURISDICTION.

At this point it is pertinent to consider the nature of the protection accorded the birds, game, or other objects of scientific interest in a monument under the care of the General Government. It has been said that the principal difference between a national monument and a national park is that a monument has merely been made safe from private encroachment, while a park has been similarly protected but in addition is in process of development so as to become a convenient resort for the people. From a legal standpoint, theoretically at least, a broader distinction exists in the matter of jurisdiction. In some of the national parks in which the necessary legislation has been enacted the jurisdiction of the Federal Government is complete and exclusive, and all cases involving violations of the law or regulations are tried in the United States courts. In the national monuments, on the contrary, State laws are still in force, as there has been no cession of State authority and jurisdiction is exercised as it were through cooperation between the Nation and the State. Whether a case is tried in the Federal or State courts depends on the nature of the offense or the question at issue. The Federal Government, as proprietor of a national monument, is in much the same position as a landowner, who has the right to protect his property against all forms of trespass, but who does not always exercise it, and who relies on the State for general protection. Stated more specifically by way of illustration the conditions are somewhat as follows: A person charged with killing game, cutting timber, or with having committed any ordinary misdemeanor in the Yellowstone National Park would be tried in the Federal court, whereas

one charged with the commission of any of those offenses on a national monument would be tried in the Federal court for cutting timber or for carrying firearms in violation of departmental regulations, but he might be tried in the State courts for killing game or committing some other misdemeanor prohibited by State law.

Under existing conditions the question is rather more complex. In 7 of the 16 national parks the Federal Government now exercises jurisdiction in the Yellowstone and Platt Parks through provisions in the acts of Congress admitting the States of Wyoming and Oklahoma to the Union; in the Hot Springs Reservation and in the Glacier, Mount Rainier, and Crater Lake Parks through the acceptance by Congress of the jurisdiction ceded by the States of Arkansas, Montana, Washington, and Oregon; and in the Hawaii Park by virtue of the jurisdiction over a Territory exercised by the General Government.[1]

In the case of the national monuments protection is afforded by a number of Federal laws and regulations. Under the monuments act (34 Stat., 225) the land is withdrawn from all forms of entry, and the injury, destruction, or unauthorized appropriation of any prehistoric ruin or object of antiquity is prohibited under heavy penalties. Under the Criminal Code (35 Stat., 1088), cutting timber is punishable by a fine of $500 or imprisonment not more than one year, or both (sec. 50); setting on fire any timber, underbrush, or grass (sec. 52), building fires in or near any timber without totally extinguishing them before leaving (sec. 53), or breaking down fences inclosing lands reserved for public use, or permitting any stock to destroy grass or trees on such lands (sec. 56), are punishable by similar or even more severe penalties.

Under the Lacey Act, now incorporated in the Criminal Code (35 Stat., 1137), the incentive to kill game for market or for hides is removed by the provision prohibiting interstate shipment of birds or game killed in violation of State laws. Under the Federal migratory-bird law (37 Stat., 847) and the treaty with Great Britain for the protection of migratory birds in the United States and Canada, migratory birds are protected throughout the year, and the band-tailed pigeon, the largest of the native pigeons, and still common in some parts of the West, is protected at all seasons for several years. (U. S. Dept. Agri.; Farmers' Bull. 774, pp. 18–20, 1916.)

Under the Grand Canyon Game Preserve act (34 Stat., 607), special protection is given the game in that part of the Grand Canyon

[1] Recommendations have been made with a view of securing cession of State jurisdiction over the General Grant, Lassen, Sequoia, and Yosemite Parks, in California, and the Mesa Verde and Rocky Mountain Parks, in Colorado. Thus the Casa Grande Ruins, Wind Cave, and Sullys Hill Parks are the only ones in which no such action has been taken. Special protection of the Sullys Hill Park, in the matter of hunting and trapping, has recently been provided by the State of North Dakota.

Monument overlapping the game preserve along the north rim of the canyon. Under the National Park Service act (39 Stat., 535), the Secretary of the Interior is authorized to dispose of dead or diseased timber, to provide for the destruction of injurious species of animals or plants, and to regulate grazing. Regulations for the government of the monuments promulgated by the Department of the Interior in 1910 prohibit building fires, using firearms, fishing, picking flowers, ferns, or shrubs, polluting the water, or leaving vehicles or horses, except at designated places. (Report on Sullys Hill Park, Muir Woods, etc., Department of the Interior, 1915, p. 8.)

It is possible for a State to supplement the protection provided by the Government either directly or indirectly and even to prohibit all hunting on a monument as has actually been done in the case of the Pinnacles Monument. Some of the States have manifested a deep interest in the reservations and a spirit of hearty cooperation in their maintenance by enacting laws which have added materially to the protection of the wild life. The State law of Washington protecting elk, which was recently extended, that passed in Colorado in 1913 suspending deer hunting, and that protecting mountain sheep in Arizona are effective adjuncts in the preservation of the big game on the Mount Olympus, the Colorado, and the Grand Canyon Monuments. California made the Pinnacles Monument a State game preserve by act of 1909 (ch. 428) and more recently has defined it as game and fish district No. 25 in which all hunting is prohibited (Laws 1915, ch. 379). Oregon has made it unlawful to hunt or trap wild animals or birds within the boundaries of any watershed reservation set aside for the Government, or on lands in any national bird or game reservation or in a national park (Laws 1913, ch. 232, sec. 20), and North Dakota has made it unlawful to hunt or trap on the national game refuge in Sullys Hill National Park or in any other national reserve or game refuge that has been or may hereafter be established within the State (Laws 1915, ch. 161, sec. 60).

SOME OF THE MORE IMPORTANT NATIONAL MONUMENTS.

Having considered the nature of a monument and the protection accorded the wild life which it contains it is in order to mention briefly the characteristics of the individual monuments and the species which may be preserved on them. First in importance may be considered the two largest monuments, the Grand Canyon and Mount Olympus, which will ultimately in all probability be made national parks.

GRAND CANYON NATIONAL MONUMENT.

The Grand Canyon National Monument, established January 11, 1908, comprises an area of about 800,000 acres and includes within

its boundaries the great chasm formed by the river together with a narrow strip along the north and south rims of the plateau. The wonders of the canyon itself with its marvelous coloring and fantastic formations so engross the attention of the visitor that little thought is usually given to anything else than scenery on this reservation. Whether maintained as a monument or made a national park it has, and will continue to have, certain features which render it important as a refuge for some kinds of big game and also for birds and other forms of wild life. The inaccessibility of many parts of the canyon walls furnish a safe retreat for mountain sheep which exist here in greater numbers than is generally realized. In 1912 Mr. Charles Sheldon, who has devoted much time and study in the field to the distribution and range of mountain sheep in the Yukon region in Alaska, and in the southwest, visited the canyon for the purpose of investigating the condition of the sheep. In his report to the Boone and Crockett Club he says:

> For the purpose of investigating the sheep two members of the game committee made in November last a special trip to the Grand Canyon of the Colorado in Arizona. They were surprised to find that with the exception of an area of 20 miles on the north side of the river directly east of Kaibab Canyon, sheep are fairly abundant in the canyon on both sides of the river, throughout the entire length of the Grand Canyon. The most conservative estimate that could be allowed places the number of sheep in the Grand Canyon at 1,000. There are probably many more. These sheep range in most places well within the inner canyon. Most of the territory where they feed is quite inaccessible to hunters.

Even if this estimate is rather high it indicates that there are more mountain sheep in the Grand Canyon than in any one of the national parks.

The scarcity of water along the south rim of the canyon makes this area unfavorable for the presence of deer in any considerable numbers, but on the north rim on the Kaibab Plateau, partly within the area of the monument but mainly in the adjoining Grand Canyon Game Preserve, mule deer are abundant. The number at present is probably several thousand, but even the most conservative estimate indicates that this is probably the largest number of mule deer within the limits of any Government reservation.

The smaller mammals and the birds also find here a safe refuge from all except their natural enemies, as the rugged canyon walls naturally discourage and prevent pursuit. Very little is known of the possibilities of the canyon as a bird sanctuary. In fact, no complete list of the birds of this reservation has yet been published, notwithstanding the fact that since the completion of the branch railroad from Williams to Grand Canyon Station in 1902 hundreds of thousands of persons have visited the spot and a number of ornithologists have stopped here at different times, but none of them

has remained long enough to prepare a list which can be considered even approximately complete. The canyon offers unusual advantages for studying the effect of altitude on the distribution of animal and plant life and in this respect affords exceptional educational advantages. On the trip down the Bright Angel Trail from El Tovar to the river the visitor descends from an elevation of 7,000 to 1,000 feet, passing in rapid succession the various forms of life found between the pine-covered plateau of northern Arizona and the fauna of the hot deserts in the southern part of the State. Although animal life does not seem abundant, opportunity is afforded for glimpses of many interesting forms, including Aberts' squirrels, chipmunks, crested and Woodhouse's jays, mountain chickadees, and tiny humming birds, while the wonderful notes of the rock and canyon wrens and several characteristic western birds may be heard. In few of the parks are the effects of the influence of elevation on distribution of wild life more clearly forced upon the attention of even the casual observer. In referring to the wonderful opportunity for studying these problems, Dr. C. Hart Merriam says:

> The complex and interacting effects of radiation and refraction, of aridity and humidity, of marked difference in temperature at places of equal altitude on opposite sides of the canyon, of every possible angle of slope exposure, and of exposure to and protection from winds and storms, produce a diversity of climatic conditions, the effect of which on the animal and vegetable life of the canyon has been to bring into close proximity species characteristic of widely separated regions and to crowd the several life zones into narrow parallel bands along the sides of the canyon—bands which expand and contract in conforming to the ever-changing surface. * * * In short, the Grand Canyon of the Colorado is a world in itself, and a great fund of knowledge is in store for the philosophic biologist whose privilege it is to study exhaustively the problems there presented. (Biol. Survey, U. S. Dept. Agr., N. A. Fauna No. 3, p. 37, 1890.)

MOUNT OLYMPUS NATIONAL MONUMENT.

Second in size only to the Grand Canyon is the Mount Olympus Monument, which occupies the summits of the Olympic Mountains in northwestern Washington. It contains many objects of unusual scientific interest, including numerous glaciers and also the summer home and breeding grounds of the Olympic elk, a species peculiar to this region. As originally established, on March 2, 1909, it contained approximately 608,640 acres. In 1912 a tract of 160 acres was eliminated, and by the proclamation of May 11, 1915, the size of the reservation was reduced 50 per cent, so that the area at present is 299,370 acres. During the last 12 years elk hunting has been suspended in the State, and this protection in connection with the protection of their breeding grounds has resulted in a gratifying increase in the number of elk. In 1905, when the close season was

first established, it was estimated that the elk in the Olympic region numbered 2,000 or less. Late in 1910, nearly two years after the creation of the monument, a careful estimate made by the forest ranger at Port Angeles, Wash., placed the total number at 3,000 or 3,500, of which about 2,000 were on the Olympic National Forest, within which the monument is located. The largest bands were found on the watersheds of the Bogachiel, Elwah, Hoh, Queetz, and Soleduck Rivers. The number of deer was estimated at 3,000 or 4,000. It is impossible to say even approximately how many elk are found within the present boundaries of the reservation. The total number in the Olympics may perhaps be conservatively estimated at about 4,000, notwithstanding some losses which have recently occurred in severe winters. This is at least double the number estimated in the herds at the beginning of the period of protection. So long as hunting is suspended the monument practically forms a national game preserve.

EL MORRO NATIONAL MONUMENT.

The El Morro National Monument, better known by its local name of "Inscription Rock," is a small reservation of 160 acres 35 miles due east of the Zuñi Pueblos, New Mexico. It was established by proclamation of December 8, 1906, for the purpose of preserving the sandstone cliffs some 200 feet in height, bearing inscriptions made by early Spanish explorers in the sixteenth and seventeenth centuries. The monument is too small to serve as a very important wild-life refuge, but it is associated with the discovery of one of the most characteristic birds of the Southwest, and as an actual record of the history of exploration of New Mexico it is probably unique. To the historian Inscription Rock is interesting chiefly on account of its association with the name of Juan de Onate, founder of Santa Fe, who, on his return from an expedition to the head of the Gulf of California, visited this point in 1606. To the ornithologist the rock recalls the visits of two eminent ornithologists, Dr. S. W. Woodhouse and Dr. Elliott Coues, and the discovery of the white-throated swift which occupies the rock as one of its breeding places. In 1851 the Government expedition from the Zuñi to the Colorado Rivers in command of Capt. Lorenzo Sitgreaves was encamped at this point and Dr. Woodhouse, naturalist and surgeon of the expedition, saw for the first time a new species of swift, which he named *Acanthylis saxatilis*. In his report he says:

> This beautiful swift I saw whilst encamped at Inscription Rock, N. Mex. Being on the top of this high rock at the time without my gun I was unable to procure specimens. I had a fair view of the birds at this time, as they flew close to me. I descended immediately and procured my gun; but the birds this

time flew too high for me to be able to procure a shot at them. They were breeding in the rocks. (Sitgreaves, Report Expedition down Zuni and Colorado Rivers, p. 64, 1853.)

A few years after Woodhouse's visit Dr. Coues camped at Inscription Rock and records an experience with the swifts very much like that of Dr. Woodhouse. He says:

While encamped at Inscription Rock (the original locality of *saxatilis*) I saw great numbers of these swifts; but as I had been obliged to leave my gun behind, to accomplish the difficult and rather dangerous ascent of the cliffs, I failed to secure specimens, though the birds occasionally flew almost in my face, so that I could positively identify them. * * *. From Inscription Rock, which lies a day's march west of Whipples Pass, between this and Zuni, to the San Francisco Mountains, I saw the swifts almost daily—always when we passed the peculiar cliffs they frequent. * * *. They generally fly very high—far out of gunshot-range, and with extraordinary rapidity. I shall never forget my disappointment when, on this account, I failed to secure specimens under the most advantageous circumstances I could reasonably expect. (Birds of the Northwest, p. 266.)

In the absence of actual specimens, Dr. Woodhouse described the new swift as best he could as having the head and rump white; the back, tail, wings, and sides black; and as being white beneath. Three years later, in 1854, a specimen of the white-throated swift was collected near San Francisco Mountain, Ariz., and examined by Prof. Baird, who described it under the specific name *melanoleucus*. For many years the bird was known by the original name given by Woodhouse; but in recent years, chiefly because the white-throated swift has no white rump and no white-rumped swift has yet been found within the borders of the United States, this name has been replaced by that proposed by Baird, based on a more accurate description and an actual specimen. The white-throated swift is now known as *Aeronautes melanoleucus*, but Inscription Rock still marks the spot where the species was first seen by an ornithologist and recalls the peculiar circumstances under which the bird was introduced to the scientific world.

MUIR WOODS NATIONAL MONUMENT.

Seven miles north of San Francisco, nestled near the foot of Mount Tamalpais, is a tract of 295 acres known as the Muir Woods. This area, formerly in private hands, was deeded to the United States December 31, 1907, by William and Elizabeth Thatcher Kent for the purpose of preserving a grove of magnificent redwoods growing in the canyon within its boundaries. The reservation is interesting not only as a monument to the species for which it was established, but also to the public spirit of the donors and the memory of the eminent Californian, John Muir, whose name it now bears.

Easily accessible from San Francisco, in an hour's trip by ferry, trolley, and steam railway, Muir Woods is visited by thousands of people every year. Many who are unable, through lack of time or means, to visit the giant sequoias on the slopes of the Sierras in the General Grant, Sequoia, and Yosemite National Parks may here become acquainted with its nearly related species, the redwood. Travelers from distant regions often find Muir Woods the most accessible point at which to observe the tree amid it natural surroundings. Great as may be the interest in the California redwood, this species is only one of a number of dominant types characteristic of an important natural-life zone in the humid coast area of California. Growing among the redwoods may be found a number of equally characteristic trees, shrubs, plants, and ferns, more or less strictly limited in their distribution to the so-called redwood belt. Here also may be found certain forms of birds, such as the crested coast jay (*Cyanocitta stelleri carbonacea*), the chestnut-backed chickadee (*Penthestes rufescens neglectus*), and numerous other forms of animal life peculiar to the coast region farther north. Here may be studied the complex relationships between the flora and fauna of the redwood belt and the more open regions in the central parts of the State. The value of Muir Woods as a wild life refuge lies not only in the preservation of the redwood trees, but in the preservation of all those species of plants, birds, and other animals which find their native habitat in the peculiar conditions under which the redwood thrives. In order to develop the reservation along these lines complete lists of the plants, animals, and birds should be published in a form accessible to the general public. Through cooperation of the California Academy of Sciences, the Cooper Club, and other organizations, local botanists, ornithologists, and zoologists should be encouraged to visit the reservation frequently and study it closely for the purpose of noting any changes in the native fauna or flora or the occurrence of rare species. When the more salient facts have been made as accessible as have been the characteristics of the geysers of the Yellowstone or the waterfalls of the Yosemite, visitors who annually go through the reservation will be stimulated to check up the observations and perchance add to the records of the occurrence of rare species.

PINNACLES NATIONAL MONUMENT.

The Pinnacles National Monument, so named on account of the spire-like formations which rise from 600 to 1,000 feet above the floor of the canyon, includes about 2,000 acres of land in San Benito and Monterey Counties, Cal. Aside from its geological and scenic interest, it is important as one of the last strongholds and breeding

places of the California condor, the largest and one of the most characteristic birds of the State. This bird is protected at all times by a provision relating to nongame birds in the State game law. Not far from this monument is the type locality (or place from which the first specimen was obtained) of the peculiar form of blacktailed deer described as *Odocoileus columbianus scaphiotus* by Dr. C. Hart Merriam in 1898. The monument was created on January 16, 1908, and a year later it was made a game preserve by act of the State legislature (Laws 1909, ch. 428). Recently it has been made a separate game district by the game law of 1915 (ch. 379, sec. 26) which provides that "Game district 25 shall consist of and include those certain lands within the counties of San Benito and Monterey embraced within the Pinnacles National Monument," etc. Thus not only is this interesting area reserved from entry and occupation, but the bird and animal life of all kinds is now protected by special provisions in the State game law.

COLORADO NATIONAL MONUMENT.

In western Colorado near Grand Junction is a little known monument which has been in existence since May 24, 1911, containing a canyon which is described as "more beautiful and picturesque than the region of the Garden of the Gods at Colorado Springs." This is one of the larger monuments, comprising 13,883 acres, and is supplied with a number of fine springs. During the cold weather hundreds of mule deer come down into the park to spend the winter. The Colorado monument is capable of being developed into an important game refuge not only for the mule deer but also for antelope, elk, buffalo, and other species characteristic of western Colorado and the Great Basin. It is better adapted for the purpose than either the Rocky Mountain or the Mesa Verde National Park, and can probably be made one of the most attractive wild-life centers in the whole Rocky Mountain region. Under present State laws the hunting of buffalo, elk, antelope, and deer is prohibited at all seasons, and with proper provision for fencing and the introduction of small nucleus herds the area could readily be stocked with big game.

PAPAGO SAGUARO NATIONAL MONUMENT.

Nine miles east of Phoenix, Ariz., and not far from Tempe is located the Papago Saguaro National Monument, including about 2,050 acres of desert land in Maricopa County. This reservation was established by proclamation on January 31, 1914, and has been in existence only about three years. A ridge of low hills rising from the desert to a height of 150 or 200 feet extends through the center of the tract, and among the rocks are prehistoric pictographs which

add to the ethnological interest of the monument. On account of its easy accessibility by automobile or team on the highway between Phoenix and Tempe, the monument is utilized largely as a picnic ground and is visited by several thousand people each year. It was created primarily for the preservation of the giant cactus (*Saguaro*) and other species of cactuses,[1] yuccas, candle bushes, and the peculiar desert flora characteristic of this region. The giant cactus is a favorite nesting place of the elf owl (*Micropallas whitneyi*) and the gilded flicker (*Colaptes chrysoides mearnsi*), while the clumps of other cactuses are the favorite breeding places of the cactus wren (*Heleodytes brunneicapillus couesi*). Other birds peculiar to this region are the curious curve-billed thrashers—Bendire's thrasher (*Toxostoma bendirei*) and the crissal thrasher (*T. crissale*), and the Arizona woodpecker (*Dryobates arizonæ*). Thus the preservation of the flora naturally attracts and preserves an aggregation of desert birds which find among the shrubs and plants suitable nesting places and an abundance of food.

Immediately west of Tucson the Carnegie Institution established, in 1903, the desert laboratory of its department of botanical research for the investigation of problems connected with the study of desert plant life. At Phoenix the Government has now established a reservation for the protection on a larger scale of some of the desert species which are the subject of study at Tucson. Three years after the establishment of the desert laboratory the grounds were inclosed by a wire fence, and within a few months after the completion of this fence a marked difference was reported between the vegetation within and without the inclosure, and also a marked increase in the number of the smaller animals. This fact is significant in showing the importance of preventing grazing animals from having free access to the monument. Apparently no complete list of the plants has yet been made, but lists both of the plants and birds should be prepared for the purpose of noting changes in the flora and fauna and for interesting the general public in the true purpose of the reservation. While the giant cactus and the yuccas may be the most conspicuous species, they are not necessarily the most interesting, and the full value of the reservation can only be developed by furnishing information to the general public in concise and popular form as to the effect which these dominant types have on other forms of life and in the whole group of species which characterizes the plant and animal life of the desert.

SIEUR DE MONTS NATIONAL MONUMENT.

Mount Desert Island, a unique and striking landmark on the Maine coast, was the first land along the coast to be described and named by

[1] Probably at least one-half of all the species native to Arizona grow within the limits of the reservation.

the French explorer Champlain. Recently 5,000 acres adjacent to Bar Harbor, including the most rugged parts of the island, have, through the generosity and public spirit of the Hancock County trustees, been dedicated forever to free public use and the purposes of wild-life conservation. The historical associations of the locality are preserved in the name of Sieur de Monts, under whose orders Champlain sailed when he discovered the island in 1604. The geological objects of interest are preserved in the bold granite cliffs which form the only mountainous tract thrust prominently out into the sea along this part of the coast. The botanical importance of the region is shown by the fact that hills and mountains support on their slopes and in their valleys a diversity of plant life which is said to be greater than can be found in any area of equal size in New England or in the Eastern States. Mount Desert lies in the highway of bird migration along the Maine coast, and here converge the lines of migrants from the north and east on their way south. Birds from four distinct life zones visit the island at some time during the year. Denizens of the Arctic and of the Hudsonian zone in Ungava and southern Labrador visit it in winter; species of the Canadian life zone, which breed in southern Canada and northern New England, nest here in summer; and in addition some species from the more southern Transition or Alleghenian fauna straggle in from the west and south. Such are some of the historic and scientific objects of interest preserved in this new monument created by proclamation on July 8, 1916. Here are preserved under most favorable circumstances a unique collection of native animals, birds, and plants, which can be enjoyed and studied amid their natural surroundings.

The plans of the founders of the reservation contemplate not merely the protection of the wild life of the area, but also its development under natural conditions, so that some forms now rare may become more abundant and the reservation thus be made more attractive. Here it may be possible to develop a bird sanctuary and feeding stations for birds on the lines of those which have proved so successful in Europe. By cultivating native shrubs and plants which furnish food for birds and thus making the sanctuary more attractive to certain birds which are now rare or which linger only a short time during migration it may be possible to induce them to tarry longer and perchance breed within the boundaries of the monument. In accessibility, opportunity for experimental work, and as a field for botanical or zoological study Sieur de Monts is unexcelled by any of the other monuments.

From the foregoing it may be seen that the much misunderstood term "monument" has a distinctive place and is in reality descriptive of certain kinds of reservations. One has only to consider the Muir

Woods and Sieur de Monts monuments as sanctuaries established on the Pacific and Atlantic coasts for the preservation of redwoods and the northern coniferous trees, respectively, to realize that in reality these two reservations are at least monuments of the public spirit of private citizens who have dedicated these wonderful tracts of wild land to the Government for the benefit of all the people.

It is apparent also that there are ample means of protecting the natural monuments which have been nationalized by proclamation and placed under the care of the Government, and that on some of the reservations are some highly interesting species which deserve the protection which can only be afforded by a wild-life sanctuary. Some kinds of big game occur in even larger numbers than in some of the national parks. Thus in the case of elk, the Mount Olympus National Monument during the breeding season harbors most of the Olympic elk in existence. Nowhere else, not even in the Mount Rainier Park in the same State, is any considerable herd of these elk to be found. The number at the present time, probably about 4,000, is larger than that of any herd of elk outside of the Yellowstone Park region.

In the case of mountain sheep, the records show about 220 sheep in the Yellowstone Park, about 400 in the Rocky Mountain Park, and a few hundred in the Glacier Park, while about 1,000 have been reported in the Grand Canyon of the Colorado. Thus the Grand Canyon Monument at present not only has more sheep than any one of the national parks, but possibly as many as there are in all of the national parks combined.

No species of big game except the antelope is in greater need of protection than the mule deer. Although several of the parks and reservations, including the Yellowstone, the Rocky Mountain, the Glacier, the Wind Cave, and Sullys Hill National Parks, and the National Bison Range, the Wichita game preserve, and the Niobrara Reservation are well adapted for this species, yet not one of these refuges has a large number of mule deer at the present time. The number in the Yellowstone Park in 1914 was estimated to be about 1,100; there are a few hundred in the Rocky Mountain Park, some in the Glacier Park, and practically none in the other reservations. In the Grand Canyon game preserve, which overlaps the Grand Canyon National Monument, there are said to be several thousand and many mule deer come down in the winter to the Colorado National Monument. While the exact number of these deer in the monuments is unknown, it is perhaps not too much to say that the Grand Canyon game preserve, the Grand Canyon Monument, and the Colorado Monument are better stocked than any other reservations with this interesting species of deer which is so characteristic of the West.

In the administration of the national parks, much attention has been devoted to rendering the parks accessible and much emphasis is laid on the number of visitors. In comparison with the expenditure on some of the parks, the amount expended in improving the accessibility of the national monuments has thus far been insignificant, but, notwithstanding this fact, four of the monuments above mentioned—the Grand Canyon, Muir Woods, Papago Saguaro, and Sieur de Monts—are readily accessible and are visited annually by thousands of sight-seers.

The first three of these reservations are open throughout the year and Muir Woods, Papago Saguaro, and Sieur de Monts are within easy reach of near-by cities. It does not require a million acres, a million dollars, or a group of attractions like those in the Yosemite and the Yellowstone to attract a large number of visitors. Muir Woods, with its 300 acres and a grove of redwoods, has as many visitors, in some years, as any of the larger parks, not even excepting the Yellowstone, with its 3,000,000 acres, its famous canyon, its falls, and its many geysers and hot springs. The number of visitors at the Grand Canyon in 1915 was estimated at 100,000, or three times as many as have ever visited the Yosemite or Mount Rainier and twice as many as have ever visited the Yellowstone in a single season. Even the Papago Saguaro has more visitors than such parks as the Casa Grande Ruins, Sullys Hill, or the Mesa Verde. People will find objects of interest and means of enjoyment in any of the reservations which are within easy reach, and since some of the monuments may be made more accessible than some of the parks, and at less expense, it seems important to develop at once the resources of these reservations for the benefit of the public.

PUBLICITY.

More attention should be given to publicity both within and without the reservations—within, by making the points attractive, by marking the less prominent objects of interest, not merely with names and signs but with descriptive labels somewhat after the type of museum labels; without, by bringing the monument home to the individual who can not be brought to the monument. In addition to the usual methods of publicity employed in popularizing the national parks, such as illustrated publications, magazine articles, news notes, photographs, moving pictures, railroad advertising, etc., certain other methods are necessary to disseminate and popularize the information regarding some of the smaller and more remote reservations. In comparison with the geological work which has been done in some of the parks and the ethnological work which has been undertaken on some of the ruins in the Southwest, the amount of natural

history work actually done in the parks and monuments is pitifully meager. Such work whether done by the various bureaus of the Government or by private enterprise should be encouraged in every possible way. We can hardly know too much about the natural resources of these various recreation grounds. There should be many more publications like those on the flora of Mount Rainier, the fishes of the Yellowstone, the forests of Crater Lake, of the Yosemite, and of the Sequoia Parks. Lists of the birds and mammals, such as are now published in the circulars of information of the Yellowstone and Yosemite, but with brief notes, should be prepared for each of the monuments which form important wild-life sanctuaries. Efforts should be made not merely to add to the volume of current and ephemeral literature, chiefly useful in attracting visitors, but to encourage the preparation of more permanent publications in the form of local lists, special papers, and monographs which may find a place in the proceedings of scientific societies and later utilized in the preparation of textbooks and standard works of reference.

Public museums, especially those which are now devoting attention to the installation of so-called habitat groups or the exhibition of animals, birds, and plants in groups amid natural surroundings, should be encouraged to obtain material and install groups representing the wild life of these reservations. Such groups illustrating the Muir Woods, the Sieur de Monts, the Grand Canyon of the Colorado, the Pinnacles, and the Papago Saguaro installed in the museums of San Francisco, Los Angeles, Denver, Chicago, and New York would be viewed by thousands of visitors and prove of high educational value. Local students interested in particular problems in distribution of wild life should be encouraged to make the monuments and the parks the field of their investigations. Notes on the wild life should be furnished regularly to such organizations as the American Game Protective and Propagation Association, the National Association of Audubon Societies, the Mazamas, the Sierra Club, and local associations which are interested primarily in problems of conservation and education so that their members may assist in the work of disseminating information and popularizing the reservations.

ADMINISTRATION.

The proper administration of some of the smaller national monuments differs greatly from that of the larger reservations or of the national parks. A national monument may be allowed to lie dormant for years, practically unknown and undeveloped; it may be left without a custodian only to be injured or destroyed by vandals so that eventually it accomplishes nothing more than if it had never been established; or it may be cared for and developed so as to pro-

duce a rich return to the people for whose benefit it was created. Such a monument as the Devils Tower, which can not be carried away or seriously defaced except by painting signs and advertisements on the rocks at its base, may require little beside publicity and warning notices to make it properly known and provide for its protection. Monuments like the Montezuma Castle or the Navajo, which contain cliff dwellings, require not only publicity to make their wonders known, but also custodians to protect their ruins from injury. But a monument established for the preservation of wild life requires more than either of the types of reservations just mentioned. It needs publicity of a peculiar kind to set forth clearly and in simple language the facts (often obscure to the casual visitor) regarding the nature and life history of its treasures. It requires the services of a resident official, who should be something more than a mere custodian, who should be intelligent, and in sympathy with the objects of the reservation in order that he may act as guardian, guide, and instructor to the public and impart authentic information while answering the numerous questions regarding the objects under his charge. It also requires constant observation and careful study by specialists. A reservation like the Muir Woods is undergoing constant changes, many of which are apparently only upon close examination. Species now abundant may become scarce, others now rare may increase in abundance, and still others now absent may appear. The dates of arrival and departure of the birds, the times of their meeting, the dates of flowering and fruiting of the plants all vary from season to season. These and other similar facts should be observed, recorded, and made public. Much of this work can not be performed by a regular custodian and can be done, if at all, only through the cooperation of special students or observers. A national monument maintained as a sanctuary for wild life should become practically a natural outdoor laboratory or observatory. It is in reality a property of all the people which can only be administered successfully for the people, when utilized fully and studied carefully by the people themselves.

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